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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/528,794

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EXAMINER

ZHENG, LOIS L

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/528,794	Applicant(s) ISHIGAMI ET AL.	
	Examiner LOIS ZHENG	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8 October 2008 has been entered.

Status of Claims

2. Claims 1 and 5 are amended in view of applicant's amendment filed 9 September 2008. Claim 2 is canceled. Therefore, claims 1 and 3-9 are currently under examination.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1 and 3-4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In this case, the new amended feature recites air bubbling "external air" into the alkaline solution. However, instant specification only mentions air is blown into the solution and does not mention the source of air, i.e. whether air bubbles are brought from the outside or air bubbles are internally generated. Therefore, the examiner concludes that the instant specification does not provide sufficient support for the amended term "external air".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 and 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-012990(JP'990), and further in view of Kovacs et al. US 5,211,663 (Kovacs).

JP'990 teaches a passivation method for treating a metal workpiece to improve corrosion resistance, wherein the metal workpiece is immersed in an alkaline passivation solution comprising an alkaline agent such as sodium bicarbonate, calcium carbonate, and carbon dioxide (abstract, paragraph [0021]). Air bubbles are generated by a water jet or an ultrasonic wave in the alkaline passivation solution and the pH of the passivation solution is controlled (abstract, paragraphs [0006-0012]). JP'990 further teaches such passivation method can be applied to metals such as stainless steel(abstract, paragraph [0014]).

However, JP'990 does not explicitly teach that the air bubbles are from external air. JP'990 also does not explicitly teach the claimed treatment temperature of 40-60°C.

Kovacs teaches a passivation method for treating metal surfaces such as stainless steel(abstract). Kovacs further teaches that the passivation solution may be oxygenated by bubbling with air or oxygen to improve the passivation process(col. 5 lines 52-54). Kovacs also teaches that the passivation temperature is 20-50°C and higher passivation temperature leads to faster passivation rate, but could also result in a less uniform passive layer(col. 5 lines 55-62).

Regarding claim 1, one of ordinary skill in the art would have found it obvious to have substituted the cavitation air bubble generation technique as taught by JP'990 with air or oxygen bubbling technique as taught by Kovacs with expected success of improving the passivation process as taught by Kovacs.

In addition, one of ordinary skill in the art would have found it obvious to have varied the passivation temperature in the passivation method of JP'990 via routine optimization to achieve desired passivation rate and the desired uniform passive layer on the metal surface, since Kovacs teaches that the passivation temperature is a result effective variable that affects the rate of passivation and the uniformity of the passive layer.

In addition, the alkaline passivation solution as taught by JP'990 in view of Kovacs has a pH that encompasses the claimed pH of 9-12. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed pH range from the disclosed range of JP'990 in view of Kovacs would have been obvious to one

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skilled in the art since JP'990 in view of Kovacs teach the same utilities in its' disclosed pH range.

Furthermore, since JP'990 teaches that the pH of its passivation solution is controlled, then the claimed addition of a pH buffer or the claimed pH buffer action is present within the passivation process of JP'990 in view of Kovacs.

Lastly, JP'990 in view of Kovacs teach the claimed alkaline solution containing the claimed carbon dioxides, the examiner concludes that the claimed passive film produced from metal ions constituting stainless steel and hydroxide ions is formed in the process of JP'990 in view of Kovacs.

Regarding claim 3, Kovacs further teaches that after the formation of passive film, the metal surface is rinsed with water and dried(col. 6 lines 11-13). Therefore, one of ordinary skill in the art would have found it obvious to have rinsed the stainless steel surface undergone the passivation process of JP'990 in view of Kovacs with water and dried the passive film as taught by Kovacs in order to remove excess passivation solution on the metal surface and to dry the passive film. In addition, even though JP'990 in view of Kovacs do not explicitly teach the claimed drying temperature of 100-200°C, one of ordinary skill in the art would have found it obvious to have varied the drying temperature in the process of JP'990 in view of Kovacs via routine optimization in order to achieve desired coating drying speed since the drying temperature directly affects how fast the passive layer becomes dry, i.e. result effective variable.

Regarding claim 4, even though JP'990 in view of Kovacs do not explicitly teach that the stainless steel member is a separator for fuel cell, one of ordinary skill in the art

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would have found it obvious to apply the metal surface treatment process of JP'990 in view of Kovacs to a stainless steel member used for any purposes including the claimed separator in a fuel cell.

7. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtani et al. US 2003/0162077 A1(Ohtani) in view of Fukui et al. US 6,440,598 B1(Fukui), and further in view of Kovacs.

Ohtani teaches a method for making stainless steel separator for use in a fuel cell comprising pressing the stainless steel sheet to form gas flow and cooling water passages and subjecting the press-formed separator to passivation treatment to form a passivation layer on the surface of the stainless steel separator(abstract, paragraphs [0005, 0009, 0024]).

However, Ohtani does not explicitly teach the claimed application of lubricant and the claimed cleaning, rinsing, passivation using an alkaline solution and drying steps.

Fukui teaches also teaches a process for the manufacturing of separators for use in a fuel cell(abstract). Fukui further teaches that the workability of the metal material during press-forming can be improved by applying a lubricant onto the surface of the material(col. 2 lines 27-63).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the use of a lubricant as taught by Fukui into the separator manufacturing process of Ohtani in order to improve the workability of the press-forming step as taught by Futui.

The teachings of Kovacs are discussed in paragraph 6 above. Kovacs further teaches that its passivation process can be preceded by pre-treatments such as alkaline cleaning and rinsing steps(col. 5 lines 25-30). Furthermore, Kovacs teaches that the passivated and heat treated metal surface can be rinsed and dried(col. 6 lines 12-14). The passivation film formed as taught by Kovacs comprises hydroxide as calimed(col. 6 lines 3-5). Example 4 of Kovacs further shows that an alkaline pH of 12(col. 7 line 32).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the passivation process, including the pre-treatment and post-treatment steps, as taught by Kovacs into the passivation step in the separator manufacturing process of Fukui in order to achieve superior corrosion resistance as taught by Kovacs (col. 3 lines 59-62).

Regarding claim 5, the separator manufacturing process as taught by Ohtani in view of Fukui and Kovacs is substantially similar to the separator manufacturing process as claimed(i.e. substantially the same press-forming, alkaline cleaning, washing/rinsing, passivation, rinsing and thermal drying steps). In addition, even though Kovacs teaches that the passivation solution is applied by immersion instead of spraying, one of ordinary skill in the art would have found it obvious that the passivation solution of Ohtani in view of Fukui and Kovacs can be applied by spraying with expected success since both spraying and immersion are functionally equivalent passivation application techniques widely known and used in the metal surface passivation and conversion coating industry.

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Regarding claim 6, the passivation solution as taught by Ohtani in view of Fukui and Kovacs has a pH of 12 as shown in Example 6 of Kovacs. Kovacs further teaches a preferred the passivation temperature of 37°C(col. 5 line 58).

Regarding claim 7, Kovacs further teaches the addition of pH buffer(col. 5 lines 50-52).

Regarding claim 8, although Ohtani in view of Fukui and Kovacs do not explicitly teach the claimed drying temperature, one of ordinary skill in the art would have found it obvious to have adjusted the drying temperature via routine optimization in order to achieve desired drying rate.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtani in view of Fukui and Kovacs, and further in view of Vashi US 4,497,667(Vashi).

The teachings of Ohtani in view of Fukui and Kovacs are discussed in paragraph 7 above. However, Ohtani in view of Fukui and Kovacs do not explicitly teach the alkaline cleaning solution comprises adding a surfactant to a basic salt as claimed.

Vashi teaches a highly alkaline cleaning comprising basic salts and surfactant (abstract, col. 2 lines 26-66, col. 3 lines 31-48).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the alkaline cleaning solution as taught by Vashi into the alkaline cleaning step in the process of Ohtani in view of Fukui and Kovacs in order to provide effective cleaning and conditioning of the metal surface prior to subsequent coating treatment as taught by Vashi(col. 2 lines 12-16).

Response to Arguments

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9. Applicant's arguments, filed 9 September 2008, with respect to claims 1 and 3-4 have been fully considered but they are moot in view of new grounds of rejection set forth in paragraph 6 above.

10. Applicant's arguments, filed 9 September 2008, with respect to claims 5-9 have been fully considered but they are partially moot in view of new grounds of rejection set forth in paragraphs 7-8 above.

In the remarks, applicant argues that Kovacs teaches using "non-aggressive oxyanions", not the aggressive oxyanions such as carbonate anions.

The examiner does not find applicant's argument persuasive because none of the instant claims requires the presence of carbonate anions. In addition, instant claim 5 only requires that the passivation film constitute hydroxide ions, which is taught by Kovacs.

Applicant argues that Ohtani describes a grinding process and does not teach any of the claimed processing steps.

The examiner does not find applicant's argument persuasive because the rejection ground for claims 5-8 are based on combined the teachings of Ohtani in view of Fukui and Kovacs and Ohtani is incorporated into the rejection ground due to its teaching of press forming a metallic plate into a separator having alternate ridges and grooves(i.e. separator with gas and water flow passages) and subsequent passivation.

Applicant further argues that Fukui does not teach anything about passivating stainless steel surface.

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The examiner does not find applicant's argument convincing since Fukui is incorporated into the rejection ground not for its teaching of passivating a stainless steel surface, but for its teaching of applying a lubricant during separator manufacturing process to improve workability during press forming.

Applicant further argues that Vashi teaches away from claim 9 because it is directed to a cleaning and conditioning solution, not a passivation solution as claimed.

The examiner does not find applicant does not find applicant's argument persuasive since the alkaline solution as recited in instant claim 9 is directed to the alkaline cleaning solution used prior to passivation, not the alkaline passivation solution. Vashi is incorporated into the rejection ground for its teaching of alkaline cleaning solution, not for passivation. Therefore, Vashi does not teach away from claim 9.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOIS ZHENG whose telephone number is (571)272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art
Unit 1793

LLZ
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